These differences are also reflected in the observed findings for sensitive and specificity.

1016-43 Is Stenosis Severity Predictive of Future Coronary Artery Occlusion in a Paired Angiographic Study?

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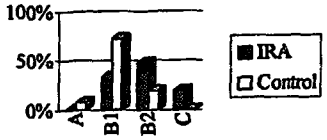
Recent data suggest that mild coronary stenoses are likely to account for the infarct related artery (IRA) in patients with acute myocardial infarction (MI). We analyzed the angiographic variables for a subset of patients with paired coronary angiograms from 1977–1983 at our institution utilizing quantitative coronary angiography. Thirty-five patients with 36 lesions were studied with a mean follow-up of 60.1 ± 0.2 months. Control segments were taken from the non-IRA segments of each patient. There was no significant difference in stenosis severity: 49.1 ± 0.6 vs 38.9 ± 0.7%, p = ns.



Plaque morphology. p < 0.001 between all variables

While overall stenosis severity is not predictive, lesion type is predictive of future occlusion, suggesting that cardiologists may want to consider more aggressive medical measures to retard progression in these patients.

1016-44 Plasma Level of Brain Natriuretic Peptide Is a Sensitive Indicator of Left Ventricle Dysfunction in Asymptomatic Patients With Myocardial Infarction: Comparison of Thallium(Tl)-201 Scintigraphic Myocardial Infarct Size With Plasma Level of Brain Natriuretic Peptide

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We have shown that atrial and brain natriuretic peptides (ANP and BNP) are secreted from left ventricle (LV) in proportion to the severity of the LV dysfunction in patients (pts) with overt heart failure. However, the clinical value of plasma levels of ANP and BNP remains undetermined in the asymptomatic pts with LV dysfunction. The aim of this study was to examine whether ANP and BNP levels in the asymptomatic pts with old myocardial infarction (OMI) were correlated with myocardial infarct size which is an important determinant of prognosis in pts with OMI. Plasma levels of ANP and BNP in the blood in the anterior interventricular vein (AIV), the aortic root (AO), and the femoral vein (FV) were measured by the immunoradiometric assay in 57 pts with OMI and were compared with myocardial infarct size quantitatively calculated from the persistent defect with rest Tl-201 myocardial scintigraphy, which has been shown to be a noninvasive and accurate method providing the myocardial infarct size. The difference between the levels in the AIV and AO (AIV-AO), which reflects the amounts of ANP and BNP secreted from LV, and the levels in FV were both positively correlated with the infarct size quantitatively calculated by the scintigrams in 26 symptomatic pts with OMI (ANP: AIV-AO; r = 0.54, p < 0.002, FV; r = 0.55, p < 0.001. BNP: AIV-AO; r = 0.63, p < 0.001, FV; r = 0.58, p < 0.001). In a subgroup of the 31 asymptomatic pts (NYHA class 1), in whom myocardial infarct size was significantly smaller than that in the symptomatic pts, BNP levels still had a linear positive correlation with the infarct size (AIV-AO; r = 0.55, p < 0.002. FV; r = 0.61, p < 0.001), but ANP levels had no significant correlation with that (AIV-AO; r = 0.27, p = NS. FV; r = 0.11, p = NS).

Thus, ANP and BNP secreted mainly from LV were increased in the peripheral circulation in proportion to the infarct size estimated with the scintigraphy in pts with OMI. BNP was positively correlated with the infarct size regardless of the presence or absence of cardiac symptoms in pts with OMI, while ANP was not in the asymptomatic pts, in whom ANP may be secreted mainly from atria. BNP levels in peripheral circulation may serve as a sensitive and useful indicator of the extent of the myocardial infarct size even in asymptomatic pts with OMI.

1017 Pediatric Cardiology: Investigation in Patients With Single Ventricles

Wednesday, March 27, 1996, Noon–2:00 p.m.
Orange County Convention Center, Hall E
Presentation Hour: Noon–1:00 p.m.

1017-53 Outcomes After Bidirectional Cavopulmonary Shunt in Infants Under Six Months of Age

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There have been few reports of outcomes after bidirectional cavopulmonary shunt (BCPS) in infants under 6 months of age. Since 1992, 37 infants between 0.8 and 6.0 months (mean 3.7 ± 1.5 mo.) have undergone BCPS for primary (n = 16) or secondary (n = 21) palliation of tricuspid atresia (n = 10), HLHS (n = 9), or other forms of functional single ventricle (n = 18). Surgery was performed with CPB in 27 patients (74%) and an extra source of pulmonary blood flow (ExPBF) was included in 15 patients (40%). Hospital mortality was 5.4% (2/37). Eight patients (22%) required BCPS related reoperation in the early post-operative period: procedures included BCPS takedown (n = 4; 1 early death), and procedures to increase (n = 1; early death) or decrease (n = 3) PBF. Five patients (4 of whom had reoperations) had pleural effusion requiring chest tube drainage of ≥ 7 days. Follow-up on the 32 patients discharged with intact BCPS ranged from 1 to 32 mo. (median: 13 mo.), during which time 3 patients died (6.5 ± 2.5 mo. post-operatively), from pulmonary arteriovenous fistulae (n = 1), myocardial infarction (n = 1), and an undiagnosed respiratory illness (n = 1). Three other patients have undergone successful Fontan completion (18.3 ± 2.9 mo. after BCPS). Univariate analysis showed age < 1 mo. (n = 2; p = 0.006), pre-op PAP > 15 mmHg (n = 9; p = 0.01), and ExPBF (n = 15; p.025) to be positively correlated with early post-operative events (defined to include death, BCPS take-down, PBF related reoperation, or pleural effusion ≥ 7 d.). By multivariate logistic regression analysis, age < 1 mo. (p = 0.006) and PAP > 15 mmHg (p = 0.02) were significant. Pulmonary artery pressures on the first postoperative day in patients < 1 mo. were < 14 mmHg, so it appeared that BCPS failure was not due to high PVR, but to some other process. Outcomes after BCPS in young infants are comparable to those in older infants and children. However, BCPS does not appear to be a viable option in neonates.

1017-54 Hemodynamic Effect of Right Atrial Dilation in Atriopulmonary Connections

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The atriopulmonary connection (APC) remains a widely used connection for repair of complex congenital heart disease. This connection geometry, however, imposes a pressure load on the right atrium (RA) that leads to right atrial dilation (RAD), which in turn is associated with superventricular arrhythmias, atrial thrombus formation and possibly adverse hemodynamics. This study addressed the hypothesis that progressive RAD contributes to inefficient flow dynamics. *Methods:* APC was performed on explanted isolated pig heart preparations with various degrees of surgically induced RAD graded from 0 to 2 (0 = no RAD). The connection was perfused with a blood analog fluid using a variable voltage continuous flow pump (flow rates: 1.4 – 6.0 L/min). Pressure differences across the APC and pump voltages representing required power were recorded as a function of flow rate for each model. *Results:* Calculated resistance to flow and required pump voltage increased with RAD (p < 0.001). At a flow rate of 3 liters/min, the calculated resistances of grades 0, 1, 2 RAD were 0.5, 0.63 and 0.96 mmHg/l min^{-1} respectively. Differences in resistances and required voltages were further accentuated between RAD grades at higher flow rates (p < 0.01). *Conclusions:* RA dilation in APC increases the energy required to move blood from the caval veins to the pulmonary arteries, and the flow dependence may help explain exercise intolerance observed in these patients. These findings also provide rationale for conversion from APC to lateral tunnel total cavopulmonary connections in selected patients.